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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(54) Title: INTERACTIVE ENTERTAINMENT SYSTEM

(57) Abstract

An interactive entertainment system allows an audience to select the perspective or plot of an interactive episode. The audience is provided with polling units with which to vote during scenes of the episode. A polling computer and main computer tabulate the results of the voting and then select a series of images stored on a videodisk to be played by a videodisk player and transmitted to a video projection unit.

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INTERACTIVE ENTERTAINMENT SYSTEM

BACKGROUND OF THE INVENTION

The present invention relates generally to an
entertainment apparatus in which the audience par-
5   ticipates in the creation of the entertainment and
more particularly to a device which permits the
audience to select video images to control the per-
spective or plot of a film.

BACKGROUND ART

10   Many live theaters present productions in which
the actors poll members of the audience in order to
determine how the play being performed will end.
That type of improvisational or interactive theater,
however, allows the audience only limited partici-
15   pation in the production. Generally, the audience
is polled only once and there is no opportunity for
audience members to change their selection. More-
over, such schemes have not been used with filmed or
videotaped presentations because of the inability to
20   simply and easily poll the audience and then change
the images on the film or videotape in accordance
with the results of the polling.

While films and videotapes have not been sub-
ject to audience interaction in the past, there are
25   many entertainment systems, such as computer or
video games or interactive compact discs, in which
user input controls the series of images placed on a
screen. However, these systems do not permit users

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the ability to determine the plot of a story or the
perspective from which that story is presented or
allow a large number of users to vote on choices
presented in the story. Moreover, given the general

5   public's unfamiliarity with interactive entertain-
ment systems, such systems must be simple to use and
relatively inexpensive. Since the system will
generally be used in a movie theater, it should be
designed so that it can be easily retrofitted into a

10   theater.

        There are numerous possible ways to allow an
audience to participate in the entertainment, with
each type of participation requiring different
degrees of familiarity with equipment and profi-

15   ciency with its use. Thus a more successful
interactive entertainment system must allow new
users to perform simpler interactive tasks initially
and then progress to more complicated interaction
once users have become familiar with the equipment.

20   SUMMARY OF THE INVENTION

        In accordance with the present invention, an
interactive entertainment system has a means for
retrieving an image from a storage medium and a
display coupled to the retrieving means. A means

25   for conducting a poll of an audience includes a pair
of polling units with each unit having means for
registering a user choice. The conducting means
includes means coupled to the polling units for
tabulating user choices. The conducting means

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causes the retrieving means to supply a stored image
to the display based on the tabulated user choices.
    The display presents a series of images with
the series ending in at least one image which pro-
5   vides at least two choices, each choice correspond-
ing to a further series of images stored in the
storage medium. The storage medium may include a
videodisk, the retrieving means a videodisk player
and the display a video projection system. The
10 images in the storage medium are stored at time
addresses.

    Each polling unit has at least two pushbuttons
where each pushbutton corresponds to a user choice.
The polling units have a housing and each housing
15 may have a message readout. The housing of each
polling unit may be attached to a theater chair by
shaping the polling unit like a pistol grip and
attaching it to the armrest of the theater chair.
The housings of each polling unit may be connected
20 to each other in an elongated bar. The poll con-
ducting means includes means for converting signals
from the polling unit into further signals which are
tabulated by the tabulating means. The conducting
means further comprises means for sending a signal
25 to the retrieving means when a user choice has been
selected at a threshold number of polling units.
The storage medium stores at least two series of
images, each image in each series corresponding to
images in each of the other series.
30   The display presents a first series of stored
images when a first user choice is selected at a

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first threshold number of polling units and the
display presents a second series of stored images
when a second user choice is selected at a second
threshold number of polling units. The first and
5   second threshold numbers may be equal. Each image
in the first series corresponds with an image in the
second series and the retrieving means retrieves
images from the second series beginning with an
image in the second series corresponding to an image
10   of the first series next following the image of the
first series which was last retrieved from the
storage medium.

The tabulating means transmits a tabulation
image to the display and the tabulation image over-
15   lays the image on the display retrieved from the
storage medium.

The polling units may be divided into at least
two groups and the conducting means may include at
least two junction boxes. Each junction box is
20   connected to a group of polling units and each junc-
tion box records the user choices registered at the
polling units within a group and transmits those
choices to the tabulating means. The junction boxes
may include a digital latch card and a microproces-
25   sor. The microprocessor records the user choices as
a string of characters and transmits the string of
characters to the tabulating means.

The retrieving means may include at least two
videodisk players. The videodisk players are con-
30   nected to a routing switcher which receives images

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from the videodisk players and sends them to the display.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the invention
will be apparent from the following description
taken in connection with the drawings wherein:

Fig. 1 is a block diagram of the interactive
entertainment system of the present invention;

Fig. 2 is a generalized flowchart illustrating
the control program executed by the main computer
shown in block diagram form in Fig. 1;

Fig. 3 is a generalized flowchart illustrating
the series of images which may be displayed during
an episode utilizing the interactive entertainment
system;

Fig. 4 is a block diagram of the junction boxes
shown in block diagram form in Fig. 1;

Fig. 5 is a front-elevational view of a joys-
tick which may be used with the system of Fig. 1;
and

Fig. 6 is a side-elevational view of the joy-
stick of Fig. 5.

DETAILED DESCRIPTION

Referring initially to Fig. 1, an interactive
entertainment system 8 has a plurality of polling
units 10a-10k and 10l-10v, shown arranged in two
rows 11a, 11b, respectively. Each of the polling
units 10a-v, for example the unit 10a, has a housing
12 with three pushbuttons 13, 14 and 15, which a

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user may depress or actuate to make user choices as more fully described below. The diagram of Fig. 1 shows two rows of polling units 10 with eleven polling units in each row. The interactive enter-
5   tainment system 8 is designed to be used in a movie theater or other room or auditorium capable of displaying images to at least two, and preferably a large number of individuals. Thus, the number of polling units 10 and their precise construction will
10 be dependent on the size and type of theater or other room into which the system 8 is placed. Although the system 8 is primarily addressed to the control and display of visual images, sounds such as music or spoken words will generally accompany those
15 visual images. The term "images" as used herein should, therefore, be understood to include either visual images, sounds or both.

While three pushbuttons 13-15 for each polling unit 10 are depicted in Fig. 1, a different number
20 of pushbuttons may be used depending on the nature of the interactive entertainment to be displayed or played back by the system 8. Other means of selecting choices may be substituted for the push-buttons 13-15 so long as the polling units 10 are
25 capable of registering and sending a signal based upon a user's selection of one of at least two choices. Since the system will generally be used in a darkened theater, it is advantageous, although not necessary, to have lighted pushbuttons and to have
30 each of the pushbuttons glow with a different color.

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The colors can then be correlated to choices presented to the audience.

The polling units 10 will be used repeatedly by individuals who are not familiar with the system and
5   thus must be strong and easy to use. Further, the polling units 10 and other components of the system 8 should be constructed so that the theater can be easily and inexpensively retrofitted with the interactive entertainment system 8. According to one
10   embodiment, polling unit 10 is mounted on an armrest or other portion of an associated seat to be occupied by a user. As shown in Figs. 5 and 6, some or all the polling units 10 may incorporate a joystick or a pistol grip placed onto the armrest of an
15   associated seat. The pushbuttons 13, 14 and 15 are placed towards the top of the joystick so that they can be easily depressed by a user's thumb. The base 16 of the joystick may have holes (not depicted) for attaching screws or bolts to the armrest of a seat.
20   As shown in Fig. 6 the joystick may have a hand grip 17 for receiving a user's fingers when they are wrapped around the joystick. The joystick may be fabricated out of metal, ceramic or a plastic material so long as it is sturdy and will withstand
25   repeated use. The wiring associated with each polling unit 10 can then be routed from the base 16, through a shallow channel on the underside of the armrest, through a hollow metal side of the seat and into a conduit 18a or 18b (Fig. 1) which may be
30   mounted under the seats, for example, on the floor.

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Alternatively, an elongate housing in the form
of a long channel or hollow bar made of metal or
another suitable material and spanning one or more
seats may be attached to the back of a first row of
5   the seats. Polling units for other seats would
similarly be mounted on channels or hollow bars
mounted on the backs of seats in the next row for-
ward. In the case of the front row, the polling
units may be mounted on a channel or hollow bar
10   mounted on uprights forward of the front row, or may
be mounted in the armrests or another portion of
each seat as desired. The pushbuttons are then
mounted on the channel or hollow bar in groups
directly in front of seats in a second row behind
15   the first row so that users in the second row could
advantageously make their choices. In each case,
all wiring for the polling units 10 could advan-
tageously be contained in the channel or hollow bars
and/or conduits below the seats.
20   At the end of each row 11a, 11b of seats is a
junction box 20a, 20b, respectively. Each junction
box 20a, 20b is connected to each polling unit in
that row by a six-conductor modular telephone cable
or other wiring. A wireless system could also be
25   used to transmit choices from the polling units 10
to the rest of the system. The eleven six-conductor
modular cables from each row of the polling units 10
plug into the junction boxes 20. Fig. 4 diagram-
matically depicts the internal structure of junction
30   boxes 20. Inside each junction box 20 are a number
of digital input cards 21 (Fig. 4). In this case

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only digital input card 21 is shown but more or less
may be used depending on the capacity of the cards
and the number of polling units 10 connected to each
junction box 20. The input cards 21 have electronic
5   latches 22a-f, one latch for each pushbutton, which
are triggered or closed when a pushbutton is de-
pressed. In Fig. 4 only 6 latches are shown but, in
order to service all 33 pushbuttons in the rows
depicted in Fig. 1, 33 latches would be required,
10   and thus either more latches per input card or more
input cards. The digital input cards 21 are linked
via a parallel bus to a microprocessor 23, also in
the junction boxes 20, which scans the input cards
21 to determine which latches 22 are closed. There
15   will be groups of three latches for each polling
unit 10, since each polling unit 10 has three push-
buttons 13-15. The microprocessor 23 then converts
the information for each group of latches 22 into a
binary code: 0 if no pushbutton in the group was
20   depressed; 1 if the pushbutton 13 was depressed; 2
if the pushbutton 14 was depressed; and 4 if the
pushbutton 15 was depressed. The microprocessor 23
then opens all latches 22. The digital input cards
may be purchased from Alpha Products of Fairfield,
25   Connecticut or other manufacturers making similar
digital input cards. The microprocessor may be
purchased from Intel Corporation of Santa Clara,
California.

After converting the information in each group
30   into a binary code, the microprocessor 23 creates a
string of characters representing the choices regis-

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tered at each polling unit 10. Since there are
eleven polling units, the string will have eleven
characters with each character being a 0, 1, 2 or 3
representing no pushbutton depressed or pushbutton
5   13, 14 or 15 depressed, respectively. If the pol-
ling units 10 include more than three pushbuttons,
there would then be more than four different numbers
possibly encoded and sent to the polling computer 28
indicating pushbutton actuation. Similarly, if
10   there are more than eleven polling units in each
row, each junction box would send a string of a
corresponding number of characters. In any case,
the network of junction boxes 20 will communicate
the choices made or whether no choice has been made
15   at each of the polling units 10. Each junction box
20 is connected to a DC power source 23. The DC
power sources 24 provide power to the microprocessor
24 inside each junction box and also provide power
to light the pushbuttons 13-15.
20   The junction boxes 20 are daisy-chained to-
gether into a network by four-conductor telephone
cable. The network of junction boxes 20 is con-
nected to and supplies signals to a polling computer
28. In response to a data request signal from the
25   main computer 30, the polling computer 28 sends a
signal to the junction boxes 20 instructing the
microprocessors 23 in those junction boxes 20 to
send its string of eleven characters to the polling
computer 28. The polling computer 28 may send a
30   signal to each junction box 20 requesting its string

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of characters or may send one signal to all junction
boxes 20 simultaneously.

The polling computer 28 may be any personal
computer, including an IBM PC compatible 80486

5   microcomputer system with multiple serial ports.
Dedicated hardware could be used as the polling
computer 28 instead of a programmable personal
computer, if desired. The polling computer must be
suitably programmed to receive the strings of

10   characters from the junction boxes 20, store the
strings and convert them into a form which can be
used by the main computer 30. The polling computer
28 may send the strings of characters directly to
the main computer 30 or it may tabulate votes rep-

15   resented by the strings. For instance, the polling
computer may tabulate the number of polling units 10
at which each of the three choices has been made.
That tabulation could then be sent to the main com-
puter 30. The polling computer 28 may also have a

20   diagnostic package in which it determines whether
the polling units are operating properly. The pol-
ling computer may also store information on all
votes taken during a performance for later review.

Latches could be placed in the polling units 10

25   and connected directly to the polling computer 28.
The use of the junction boxes, however, is advan-
tageous in that the polling computer 28 will be
connected to fewer inputs since there are fewer
junction boxes than polling units. The fewer inputs

30   connected to the polling computer, the faster the

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polling computer will be able to retrieve infor-
mation on the choices selected by the users.

The main computer 30 is normally a suitably
programmed personal computer such as a Macintosh
5   IICi manufactured by Apple Computer of Cupertino,
California. If a MacIntosh 2CI is used, it may have
a Nu Vista Card manufactured by Truvision of
Indianapolis, Indiana or similar overlay card in
order to perform some of the image creation and
10   transmittal functions discussed below. Dedicated
hardware could be used as the main computer 30 in-
stead of a programmable personal computer, if
desired. The polling computer 28 can be connected
to the main computer 30 at a serial or parallel I/O
15   part thereof. The main computer 30 receives the
tabulation from the polling computer 28 regarding
which pushbuttons on the polling units 10 have been
selected. Together, the polling units 10, junction
boxes 20, polling computer 28 and main computer 30
20   serve as a means 32 for conducting a poll. Instead
of using a separate polling computer 28 and main
computer 30, one computer could be used to perform
all the functions performed by both. Since,
however, the main computer 30 will be performing the
25   numerous operations discussed below, it is advan-
tageous to have two computers so that the various
functions can be performed more quickly. The
division of functions between the polling computer
28 and main computer 30 may also be varied as
30   desired.

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Referring again to Fig. 1, the system 8 has a
means for retrieving one or more images from a
storage medium. In the preferred embodiment, the
retrieving means comprises a videodisk player 34,

5   which retrieves images from a replaceable videodisk
36. The videodisk 36 has many series of video
images stored on it, each series corresponding to a
separate scene in the interactive presentation. The
videodisk 36 may have images stored on it based on

10 the Society of Motion Picture and Television
Engineers' (SMPTE) time code. SMPTE time code is a
standardized measurement for all media in which
images are stored at a time address and is based on
hours, minutes, seconds and frames. The SMPTE time

15 code may be also used by the main computer 30 in
retrieving images from the videodisk 31. When a
videodisk is pressed or created, the images are
indexed at particular addresses on the videodisk
using, for instance, frame numbers, and those ad-

20 dresses may be used by the main computer 30 in re-
trieving and identifying images. A videodisk and
videodisk player are advantageous for storing and
retrieving the images because the indexing feature
of the videodisk players allows for almost instan-

25 taneous access to any series of images stored on the
videodisk. Other storage and retrieval systems
could be used in place of a videodisk and videodisk
player, so long as they are capable of storing the
images at easily accessible addresses and retrieving

30 those images quickly.

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The videodisk player 34 is preferably, although
not necessarily, a professional model such as a
Pioneer LD-V8000 Industrial Laserdisk Player, which
is capable of being controlled by a personal com-
5   puter. The videodisk player 34 may be connected to
a projection unit 38 which displays the images sent
from the videodisk player 34 on a screen in the
theater. A suitable projection unit is a Sony 1251
video projector. The videodisk player 34 may also
10   be connected back to the main computer 30 so that
video images are sent to the main computer 30, which
then sends the images to the projection unit 28.
The videodisk player 34 should have a frame buffer
which will continue to display an image when the
15   player is switching from one videodisk track to
another. The frame buffer will prevent the theater
screen from being entirely blank when scene
switching pursuant to audience voting occurs.

The projection unit 38 is also capable of dis-
20   playing images sent from the main computer 30 in-
dicating the percentages for each choice entered at
the polling units 10. The main computer 30 sends an
image to the projection unit 38, and that image
overlays the images sent from the videodisk player
25   34 to the main computer 30. In that way the
relative percentages for each choice can be superim-
posed on an image at any time. By updating the
superimposed information on the screen, the audience
will be able to see how voting is proceeding during
30   the interactive presentation. In order to improve
the quality of the displayed images, two projection

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units may be used to simultaneously display images.
If more than one projection unit is used, a video
redistribution amplifier, such as the model 3010
manufactured by Inline, Inc. of La Habra,
5   California, may be placed between the source of
images and the projection units. If the presen-
tation to be displayed is lengthy, more than one
videodisk player may be attached to the main com-
puter 30 to effectively increase the number of video
10   images which can be stored in the system. A model
553-5/1 routing switcher made by Omnicron Video of
Pasedena, California, placed between the main com-
puter 30 and the two or more videodisk players will
receive signals from the main computer 30 and then
15   control which videodisk player sends images to the
projection unit 38 or back to the main computer 30
for further routing to the projection unit 38.

    In order to control the videodisk player 34
based on the information from the polling computer
20   28, the main computer 30 must have software and data
concerning the images stored in the videodisk 36. A
suitable software system is the MacroMind Director
Version 3.1 licensed by MacroMind, Inc. of San
Francisco, California. The software allows the main
25   computer to store information concerning the SMPTE
time code or other address of images or series of
images stored on the videodisk 36, and allow the
main computer 30 to access the stored images from
the videodisk 36 based on the SMPTE time.

30   Fig. 2 is a block diagram depicting the steps
taken by the main computer 30 in carrying out the

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operations necessary to display a sample interactive
episode. The sample episode depicted is divided
into three parts: an introduction, a multi-
perspective act and a branching act. Although this
5   sample episode has both a multi-perspective act and
a branching act, a single episode might have only
one of those acts. In the sample episode the multi-
perspective act precedes the branching act, which
has advantages which will be discussed below. The
10   order of the acts could, however, be reversed.

The program begins at a block 100 when a pro-
jectionist manually starts the main computer 30
which then directs the videodisk player 34 to play
the introduction. During the introduction the
15   audience is introduced to the system's equipment and
general guidelines on how each individual in the
audience will .interact with the episode. During the
introduction the audience is also introduced to
various characters which will be present in the
20   episode. A block 102 monitors the playing of the
introduction to determine when the introduction
concludes and to begin the multi-perspective act.
Monitoring can be accomplished in one of two ways.
First the main computer could receive feedback from
25   the videodisk player 34 in order to determine when
the introduction is complete. The time addresses of
the images being retrieved can be transmitted to the
main computer 30 and those time address can be used
to trigger various functions of the main computer
30   30. Alternatively, the main computer 30 can be pro-
grammed with information on the length of the intro-

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duction or other scene in order to separately time
when the introduction or other scene is complete.

Once the introduction is complete, control
passes to a block 104 which sends a signal to the
5   videodisk player 34 to begin the multi-perspective
act. During the multi-perspective act the audience
will choose which one of three different perspec-
tives from which to view the act. The number of
possible perspectives preferably corresponds to the
10   number of pushbuttons in the polling units 10. In
this instance, the audience is given a choice of
three perspectives. Each perspective is roughly
equivalent to following one of the previously intro-
duced characters through the act. During the multi-
15   perspective act, it is only the perspective which is
changed by the audience's choice, and not the plot
or series of events which occurs during the episode.
Thus if the audience decides to change the perspec-
tive, a new character can be followed while still
20   continuing with the same plot or storyline at the
same point at which the switch occurred. Since the
plot continues at the same pace from all three pers-
pectives, the audience can change the perspective
which is displayed on the screen numerous times
25   while still viewing a coherent and chronological
story.

In order to create the video images for the
multi-perspective act, the same scene must be filmed
from three separate perspectives. Since the same
30   events occur in each of the three "films", each
filmed frame will correspond to a separate filmed

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frame in each of the other two films. When the
filmed scenes are transferred to videodisk 36, each
of the three "films" becomes a separate series of
images with each image in each series having a

5   separate SMPTE time or other address. The time
address for any image in the multi-perspective act
has two corresponding time addresses, one in each of
the other two series of images in the multi-perspec-
tive act.

10   At the beginning of the multi-perspective act
the audience chooses the perspective from which it
will begin viewing the act. Once the first choice
is made, the perspective can be changed at any time
during the act as often as the audience desires. In

15   order to change the perspective, the control first
passes to block 106, which determines whether the
multi-perspective act is done. If the multi-
perspective act is not complete, the control passes
to block 108, where the main computer 30 polls the

20   polling units 10 by sending a signal to the polling
computer 28 which then retrieves the polling data
from each of the junction boxes 20. The control
then passes to block 110, where the results of the
polling are tabulated. A choice is made by depres-

25   sing pushbuttons 13-15, each pushbutton correspon-
ding to one of the three perspectives, and thus one
of the three series of images stored on videodisk
36.

     After tabulating the results, control passes to
30   block 112 to update the screen or display by dis-
playing a tabulation image, which identifies the

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percentages of votes garnered by each of the three
choices. Control then passes to block 114 to deter-
mine whether a threshold number of votes has been
registered for one of the two perspectives which are
5   not presently being displayed. The threshold will
generally be more than 50% of the polling units 10
which are in use during the interactive performance.
In order to determine how many polling units are in
use, the audience may be asked to press any push-
10   button during the introduction and the system will
thereby calculate the threshold required to change
the perspective.

If a new majority has not been reached, control
passes to block 106 to determine whether the multi-
15   perspective act has been completed and then returns
to poll the units again. If a new majority has been
reached, control passes to block 116 to switch the
videodisk track so that the perspective with the new
majority is displayed. In order to switch the
20   videodisk track the main computer 30 must first
determine the SMPTE time code or other address of
the image which is presently displayed. The com-
puter determines the address of the particular image
in the new majority perspective which corresponds to
25   the image which is then being displayed. The main
computer 30 instructs the videodisk player 34 to
display images in the new majority perspective be-
ginning with the image which is one image following
the particular image in the new majority perspec-
30   tive. After switching the videodisk track the com-
puter determines whether the multi-perspective act

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is completed, and if not, polls the units again
until another new majority is reached, at which time
the videodisk track is switched once again.

Once the multi-perspective act terminates, the
5   audience is no longer allowed to change the perspec-
tive and the program moves into the first scene of
the branching act. In general fashion, during the
branching act, a scene is displayed to the audience,
at the end of which the audience is presented with
10   three choices on the direction of the plot of the
episode. Unlike the multi-perspective act, the
three choices will lead to a different series of
events or different plots. Once the audience has
determined the direction in which the plot will
15   continue, the main computer instructs the videodisk
player to play the selected new series of images.

Now specifically, at the end of the newly
selected branching scene the control passes to block
120 to determine whether the entire branching act is
20   completed. If the branching act is not completed,
control passes to block 122 to update a number of
values stored in main computer 30. Updating these
values would include such information identifying
the scene being played and the SMPTE time code or
25   other address for various images within that scene.
In updating the values, the vote tabulation for each
choice will be reset to 0, since any previous votes
will be unrelated to any new vote in the branching
act.

30   Once the values have been reset, control passes
to block 124 to poll the units to determine what

votes have been cast. Polling of the units for this
portion of the presentation is accomplished in the
same manner as described above wherein the main
computer 30 sends a data request signal to the pol-
5 ling computer 28, which then receives information
from the junction boxes 20. Once the units have
been polled, control passes to block 126 to update
the tabulation of votes. Control then passes to
block 128 where updated information is sent by the
10 main computer 30 to the projection unit 38 so that
the tabulation can be overlaid on the images being
displayed on the screen and the audience can monitor
the voting while it is occurring.

After the screen or display has been updated,
15 control passes to block 130 to determine whether the
voting time is completed. At the end of each
branching scene, when the audience is provided with
three choices, a timer is displayed on the screen,
for instance, ten seconds, which limits the voting
20 period. Until that voting time is up, the polling
units continue to be polled as control returns to
block 120.

Once the voting time is up, control passes to
block 132 to play the user choice or scene which has
25 been selected at the greatest number of polling
units. If, however, there is a tie in the voting,
the audience is informed of the tie by use of the
tabulation image, and control returns to block 122
so that voting can be repeated. Alternatively, a
30 default may be used which will automatically select
a scene for display when there is a tie in the

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voting. Selecting the scene to be played is done in
part by using the values which were previously up-
dated. From those values and the results of the
voting, the SMPTE time code or other address for the
5   beginning of the next scene or series of images can
be determined by the main computer 30. The main
computer 30 then sends a signal to the videodisk
player 34 based upon the address which was cal-
culated so that the videodisk player 34 will
10   retrieve the proper series of images. After the
results have been played, control once again passes
to block 120 to determine whether the branching act
is completed and then begins another round of pol-
ling or terminates the episode by passing to block
15   134 to play the credits. The voting process out-
lined here for the branching act may also be used to
conduct the first vote of the multiperspective act
in which the audience chooses the perspective from
which to initially view the act.

20   Fig. 3 is a flowchart illustrating the images
or series of images which are displayed during a
sample episode. Time for the episode proceeds from
the top of the flowchart to the bottom of the chart.
The introduction is first played, at the end of
25   which the audience selects the first perspective
from which it will view the act. Once the audience
has selected the first perspective, e.g., character
1, character 2 or character 3, the episode continues
with that perspective until a new majority has been
30   reached in the audience for one of the other two
characters. For instance, if character 1 is

- 23 -

selected initially by the audience, the episode will
continue with character 1 until more than 50% of the
audience votes for character 2 or more than 50% of
the audience votes for character 3. When the new
5   majority is reached, the new perspective is dis-
played until the audience votes for another perspec-
tive.

The multi-perspective act ends with the
audience voting on which of the three characters to
10   follow throughout the remainder of the episode. The
decision on which character to follow for the re-
mainder of the episode is the first branching level
in the branching act. When the first branching act
decision is made, a scene based on that decision is
15   played. For instance, if the audience initially
selects second branch A, when that scene terminates,
the audience is once again given three choices,
third branch A, third branch B and third branch C.
If second branch B had initially been selected, the
20   choice at the end of that branch would be between
third branch D, third branch E or third branch F.

From one level of branching to another, the
number of scenes is multiplied by three. Since each
scene is preferably a minimum of approximately one
25   minute to two minutes in length, the amount of
storage capacity on the videodisk 36, usually only
about thirty or forty-five minutes, can be rapidly
depleted. In order to minimize the number of scenes
which must be stored, intersection scenes can be
30   used. An intersection scene brings all the various
branches together in time. The branching then con-

- 24 -

tinues from the branching scene, but with only three
branches at the fourth level, instead of 27, as
would be necessary if the branching continued
without an intersection scene from the 9 previous
5   scenes. Another method of minimizing the storage
space used for storing scenes is to have portions of
scenes placed on the videodisk which can be used in
more than one scene. For instance, Second Branch A
may have a portion of a scene in which a character
10   walks down a hallway. The script for Second Branch
C might also call for the same character to walk
down the same hallway. Instead of recording the
hallway scene twice on the videodisk, those series
of images can be placed on the videodisk once, and
15   accessed as necessary by the main computer for any
branch in the presentation.

At the end of the branching, credits are
played. Credits could be played as an intersection
scene, or credits could be placed at the end of each
20   of the final branches.

Playing the multi-perspective act prior to the
branching act has advantages in helping the audience
become familiar with the system and its equipment.
The multi-perspective act does not require voting in
25   a limited length of time, but instead allows voting
at any time and changing of votes as often as an in-
dividual desires. Thus, any delay in an individual
becoming proficient in using the equipment will have
little effect on the individual's ability to par-
30   ticipate in the multi-perspective act. The branch-
ing act, on the other hand, requires voting in a

- 25 -

short period of time so that inability to use the
equipment quickly will prevent an individual from
participating effectively.

   The foregoing detailed description has been
5 given for clearness of understanding only and no
unnecessary limitations should be understood
therefrom, as modifications will be obvious to those
skilled in the art.

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CLAIMS

1.   An interactive entertainment system,
comprising:
     means for retrieving an image from a storage
medium;
     a display coupled to the retrieving means;
     means for conducting a poll of an audience
including a pair of polling units, each unit having
means for registering a user choice and wherein the
conducting means includes means coupled to the pol-
ling units for tabulating user choices; and
     wherein the conducting means causes the re-
trieving means to supply a stored image to the
display based upon the tabulated user choices.

2.   The system of claim 1 wherein the display
presents a series of images, said series ending in
at least one image which provides at least two
choices, each choice corresponding to a further
series of images stored in the storage medium.

3.   The system of claim 2 wherein the storage
medium comprises a videodisk.

4.   The system of claim 3 wherein the re-
trieving means comprises a videodisk player.

5.   The system of claim 3 wherein the display
comprises a video projection system.

6. The system of claim 2 wherein the storage medium stores images at time addresses.

7. The system of claim 1 wherein each polling unit comprises at least two pushbuttons wherein each pushbutton corresponds to a user choice.

8. The system of claim 1 wherein each polling unit comprises a housing and each housing has a message readout.

9. The system of claim 1 wherein each polling unit comprises a housing and each housing is attached to a theater chair.

10. The system of claim 9 wherein each polling unit comprise a joystick and is attached to an armrest of the theater chair.

11. The system of claim 9 wherein at least two polling unit housings are connected to each other in an elongated bar.

12. The system of claim 1 wherein the poll conducting means includes means for converting signals from the polling units into further signals which are tabulated by the tabulating means.

13. The system of claim 1 wherein the conducting means further comprises means for sending a signal to the retrieving means when a user choice

- 28 -

has been selected at a threshold number of polling
units.

14.   The system of claim 13 wherein the storage
medium stores at least two series of images, each
image in each series corresponding to images in each
of the other series.

15.   The system of claim 13 wherein the display
presents a first series of stored images when a
first user choice is selected at a first threshold
number of polling units and wherein the display
presents a second series of stored images when a
second user choice is selected at a second threshold
number of polling units.

16.   The system of claim 15, wherein the first
and second threshold numbers are equal.

17.   The system of claim 15 wherein the storage
medium stores at least two series of images, each
image in each series corresponding to images in each
of the other series.

18.   The system of claim 15 wherein each image
in the first series corresponds to an image in the
second series and wherein the retrieving means re-
trieves images in the second series beginning with
an image in the second series corresponding to an
image of the first series next following the image

of the first series which was last retrieved from
the storage medium.

19.   The system of claim 1 wherein the tabu-
lating means transmits a tabulation image to the
display and the tabulation image overlays the image
on the display retrieved from the storage medium.

20.   The interactive entertainment system of
claim 1 wherein:
     the polling units are divided into at least two
groups; and
     the conducting means includes at least two
junction boxes, each junction box connected to a
group of polling units, where each junction box
records the user choices registered at the polling
units within a group and transmits those choices to
the tabulating means.

21.   The system of claim 20 wherein the
junction boxes comprise a digital latch card and a
microprocessor.

22.   The system of claim 21 wherein the micro-
processor records the user choices as a string of
characters and transmits the string of characters to
the tabulating means.

23.   A polling system comprising:

polling units, each polling unit having means
for registering a user choice, where the polling
units are divided into at least two groups; and

at least two junction boxes, each junction box
connected to a group of polling units, where each
junction box records the user choices registered at
each polling unit within a group and transmits those
user choices to a means for tabulating user choices.

24. The system of claim 23 wherein the
junction boxes comprise a digital latch card and a
microprocessor.

25. The system of claim 24 wherein the micro-
processor records the user choices as a string of
characters and transmits the string of characters to
the tabulating means.

26. An interactive entertainment system,
comprising:

a means for retrieving an image from a storage
medium;

a display coupled to the retrieving means; and

means for conducting a poll of an audience
including polling units, each unit having means for
registering a user choice, where the polling units
are divided into at least two groups, and wherein
the conducting means includes at least two junction
boxes, each junction box connected to a group of
polling units, where each junction box records the
user choices registered at each polling unit within

a group and transmits those user choices to a means
for tabulating user choices;

wherein the conducting means causes the re-
trieving means to supply a stored image to the
display based upon the tabulated user choices and
the tabulating means transmits a tabulation image to
the display and the tabulation image overlays the
image on the display retrieved from the storage
medium.

27. The system of claim 26 wherein the display
presents a series of images, said series ending in
at least one image which provides at least two
choices, each choice corresponding to a further
series of images stored in the storage medium.

28. The system of claim 26 wherein:
the conducting means further comprises means
for sending a signal to the retrieving means when a
user choice has been selected at a threshold number
of polling units; and
the storage medium stores at least two series
of images, each image in each series corresponding
to images in each of the other series.

29. The system of claim 26 wherein:
the retrieving means comprises at least two
videodisk players; and
the videodisk players are connected to a
routing switcher which receives images from the
videodisk players and sends them to the display.
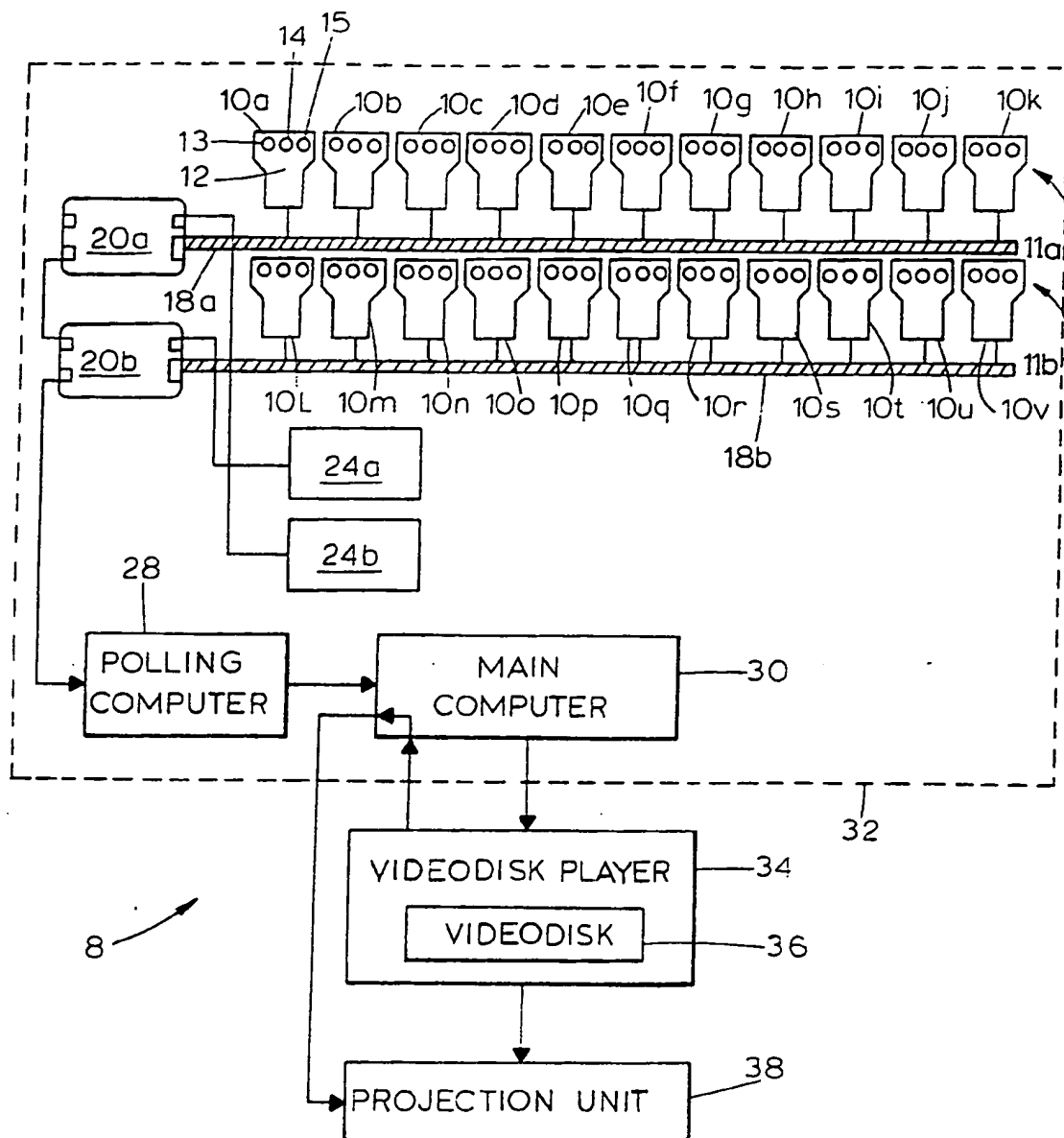
FIG. 1

FIG.2

PLAY INTRO — 100
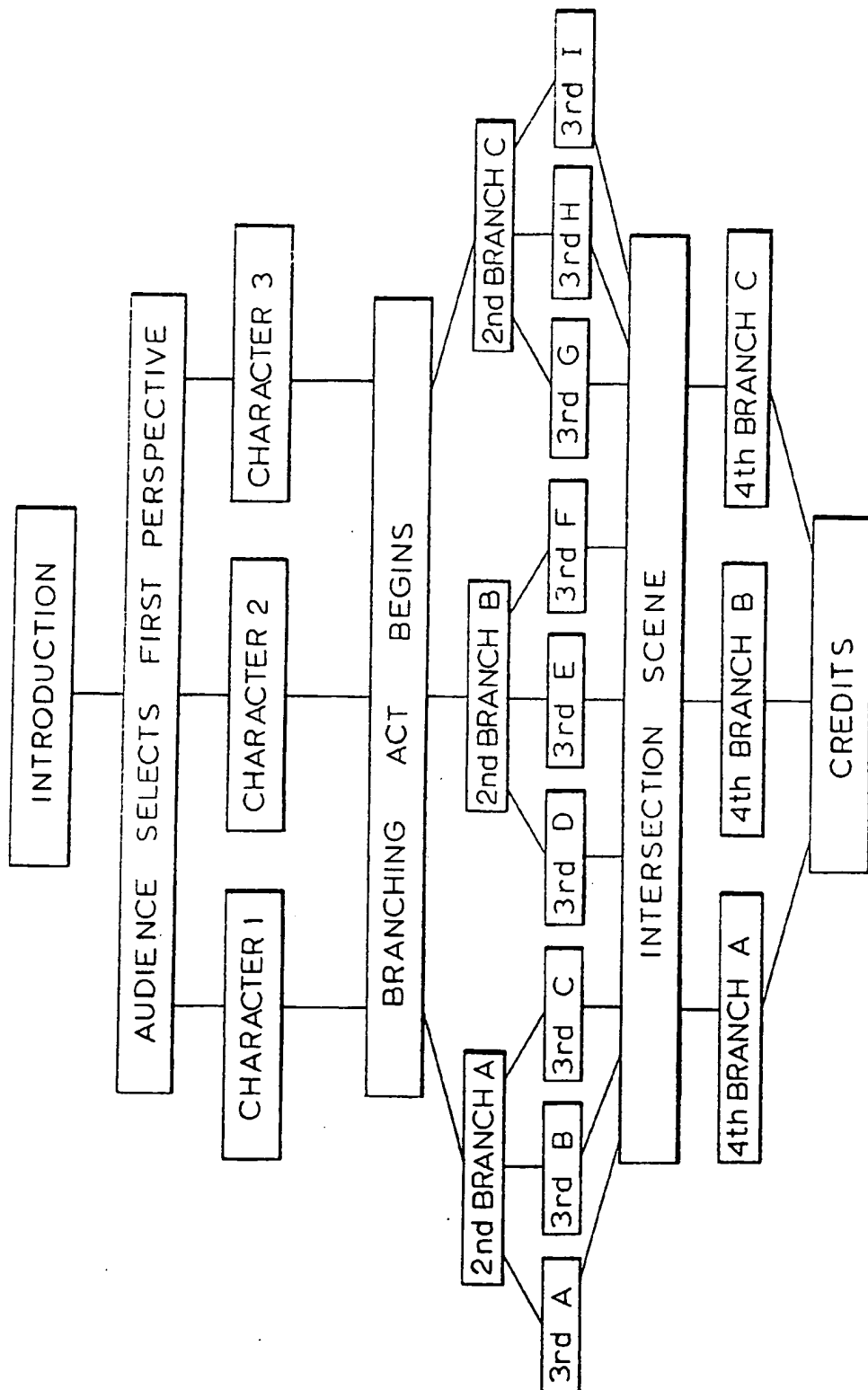
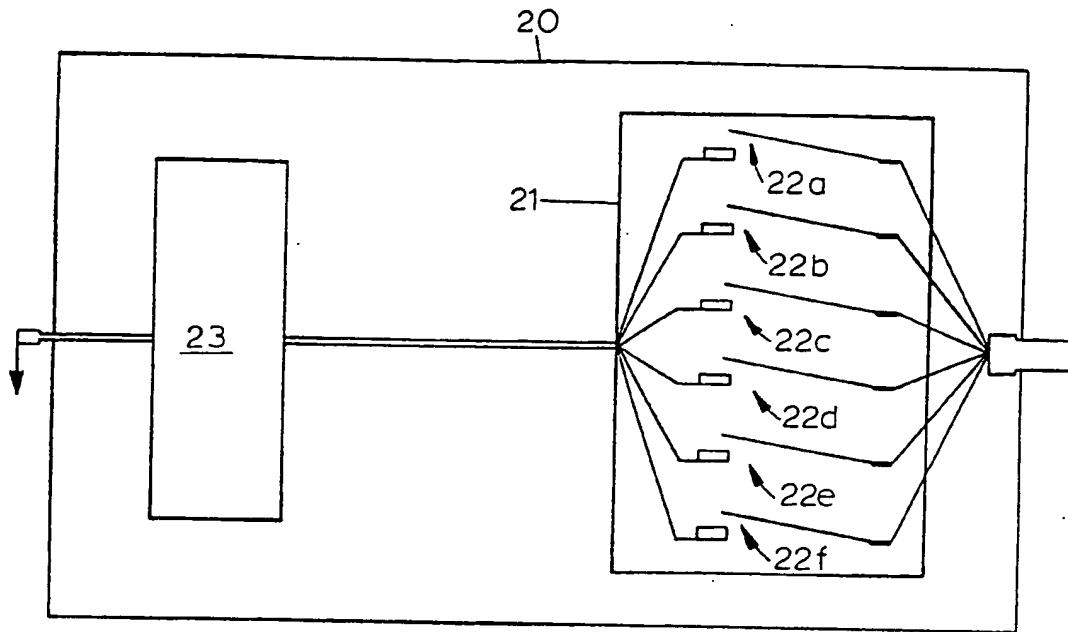102 — INTRO DONE? — NO

YES

START MULTI-PERSPECTIVE ACT — 104

118 — PLAY BRANCHING SCENE

YES ← MULTI-PERSPECTIVE ACT DONE? → NO

106

POLL UNITS — 108

120 — BRANCHING ACT DONE?

YES

PLAY CREDITS

134

NO

UPDATE VALUES — 122

124 — POLL UNITS

126 — UPDATE TABULATION

128 — UPDATE SCREEN

130 — VOTING TIME UP? — NO

132

PLAY SELECTED SCENE

UPDATE TABULATION — 110

UPDATE SCREEN — 112

114 — NEW MAJORITY? — NO

YES

SWITCH VIDEO-DISK TRACK

116
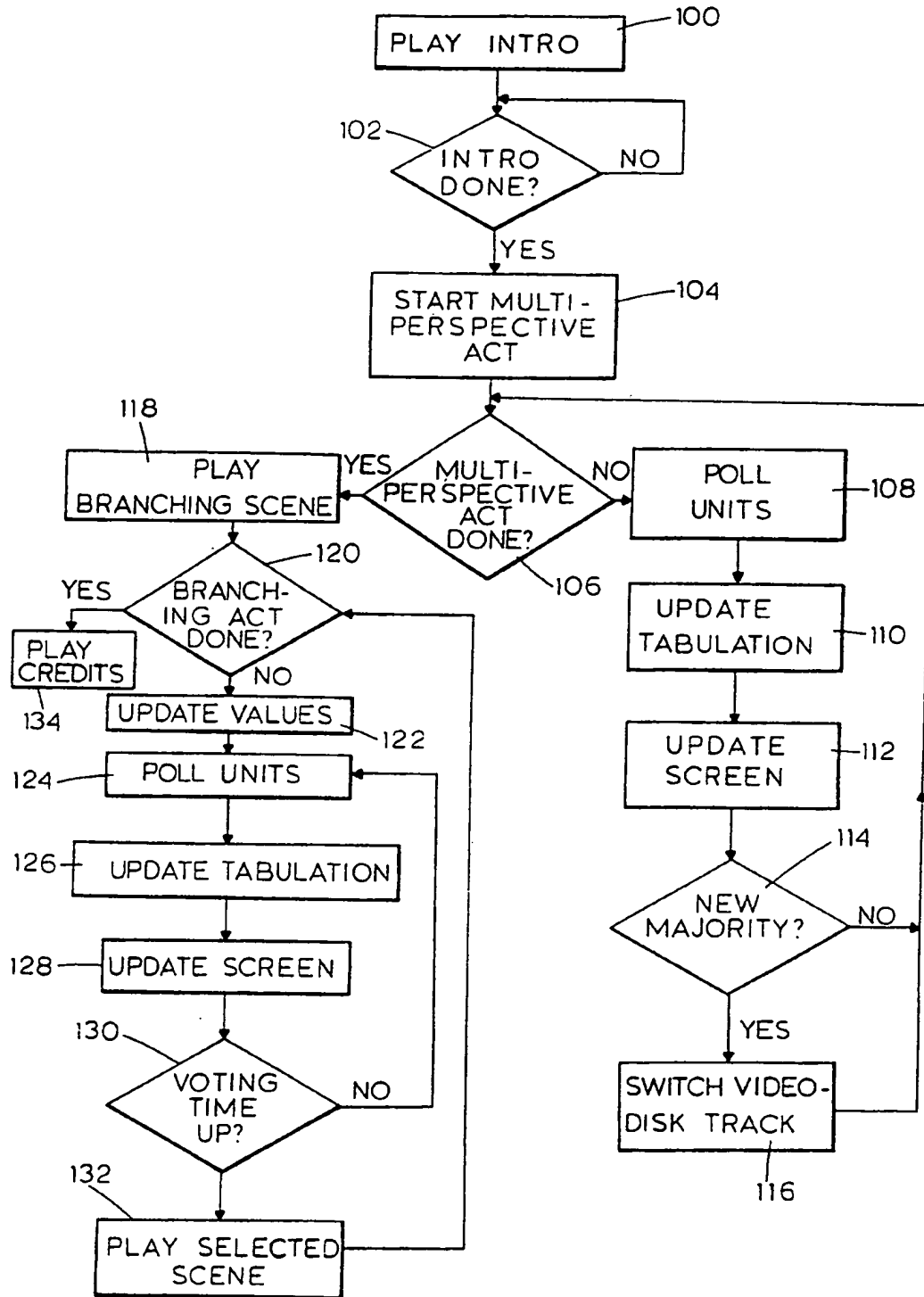
FIG.3

FIG. 4

FIG. 5
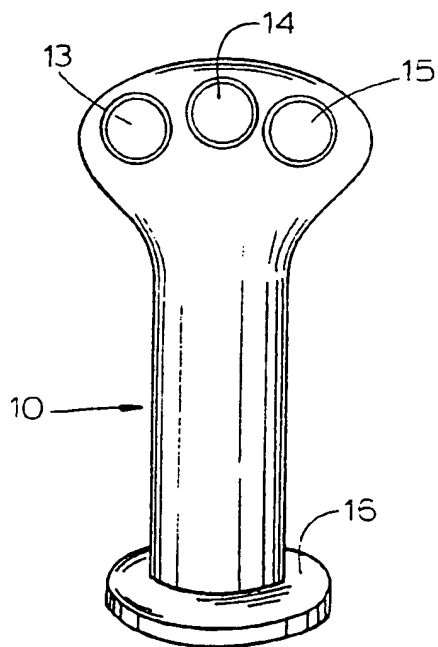
FIG. 6
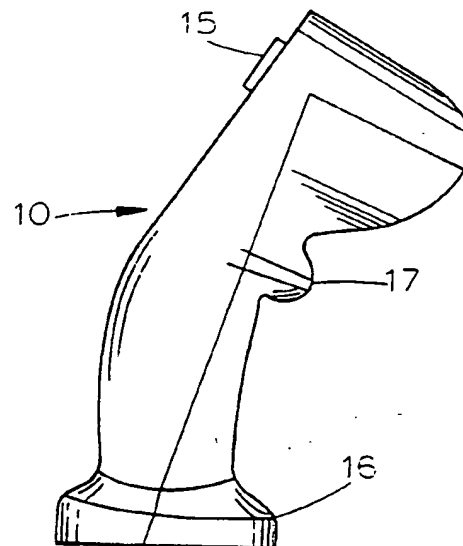
Intei   nal Application No

PCT/US 93/11457

A. CLASSIFICATION OF SUBJECT MATTER

IPC 5   H04N5/76   G06F15/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 5   H04N   G06F   G11B   H04H   A63F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US,A,3 318 517 (WELLS) 9 May 1967 see column 3, line 43 - column 6, line 24; figure 1A ---	23 1-4,7-9, 12,26,27
Y	WO,A,92 08531 (BEST) 29 May 1992 see page 1, line 1 - page 2, line 31; figures 1-9 ---	1-4,7-9, 12,26,27
A	EP,A,0 444 260 (GFK) 4 September 1991 see column 1, line 1 - column 5, line 14; figure 1 ---	1,23,26
A	AU,B,8 772 709 (BOWDEN) 3 January 1991 see figure 1 ---	1,23,26
A	AU,B,8 935 988 (BOWDEN) 8 August 1991 see figure 1 ---	1,23,26

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[X] Further documents are listed in the continuation of box C.   [X] Patent family members are listed in annex.

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'&' document member of the same patent family

Date of the actual completion of the international search

24 March 1994

Date of mailing of the international search report

05. 04. 94

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US,A,5 161 034 (KLAPPERT) 3 November 1992 see abstract -----	1,23,26

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